barge hull must have a watertight weather deck.

(c) If a Type I or II barge hull has an open hopper, the fully loaded barge must be shown by design calculations to have at least 2 inches (50mm) of positive GM when the hopper space is flooded to the height of the weather deck.

(d) When demonstrating compliance with paragraph (c) of this section, credit may be given for the buoyancy of the immersed portion of cargo tanks if the tank securing devices are shown by design calculations to be strong enough to hold the tanks in place when they are subjected to the buoyant forces resulting from the water in the hopper.

(e) Each tank barge must be shown by design calculations to have at least 2 inches (50 mm) of positive GM in each condition of loading and operation after assuming the damage specified in paragraph (f) of this section is applied in the following locations:

(1) *Type I barge hull not in an integrated tow.* If a Type I hull is required and the barge is not a box barge designed for use in an integrated tow, design calculations must show that the barge hull can survive damage at any location including on the intersection of a transverse and longitudinal watertight bulkhead.

(2) *Type I barge hull in an integrated tow.* If a Type I hull is required and the barge is a box barge designed for operation in an integrated tow, design calculations must show that the barge can survive damage—

(i) To any location on the bottom of the tank barge except on a transverse watertight bulkhead; and

(ii) To any location on the side of the tank barge including on a transverse watertight bulkhead.

(3) *Type II hull.* If a Type II hull is required, design calculations must show that the barge can survive damage to any location except to a transverse watertight bulkhead.

(f) For the purpose of paragraph (e) of this section—

(1) Design calculations must include both side and bottom damage, applied separately; and

(2) Damage must consist of the most disabling penetration up to and includ-ing penetrations having the following dimensions:

(i) Side damage must be assumed to be as follows:

(A) Longitudinal extent—6 feet (183 centimeters).

(B) Transverse extent—30 inches (76 centimeters).

(C) Vertical extent—from the baseline upward without limit.

(ii) Bottom damage must be assumed to be 15 inches (38.1 centimeters) from the baseline upward.

Subpart D—Special Rules Pertaining to a Vessel That Carries a Cargo Regulated Under 33 CFR Part 157

§ 172.060 Specific applicability.

This subpart applies to each U.S. tank vessel that is required to comply with 33 CFR 157.21.

[CGD 90–051, 57 FR 36246, Aug. 12, 1992]

§ 172.065 Damage stability.

(a) *Definitions.* As used in this section, *Length* or *L* means load line length (LLL).

(b) *Calculations.* Each tank vessel must be shown by design calculations to meet the survival conditions in paragraph (g) of this section in each condition of loading and operation except as specified in paragraph (c) of this section, assuming the damage specified in paragraph (d) of this section.

(c) *Conditions of loading and operation.* The design calculations required by paragraph (b) of this section need not be done for ballast conditions if the vessel is not carrying oil, other than oily residues, in cargo tanks.

(d) *Character of damage.* (1) If a tank vessel is longer than 738 feet (225 metes) in length, design calculations must show that it can survive damage at any location.

(2) If a tank vessel is longer than 492 feet (150 meters) in length, but not longer than 738 feet (225 meters), design calculations must show that it can survive damage at any location except the transverse bulkheads bounding an aft machinery space. The machinery space is calculated as a single floodable compartment.